CH2M HILL HEALTH AND SAFETY PLAN

This plan will be kept onsite during field activities and will be reviewed and updated as necessary. This plan adopts, by reference, the standards of practice (SOP) contained in the CH2M HILL *Waste Management and Industrial Processes Discipline Health and Safety Manual, Volumes 1 and 2*, and other applicable CH2M HILL SOPs as appropriate. In addition, this plan adopts procedures contained in the work plan for the project.

1.0 PROJECT INFORMATION AND DESCRIPTION

CLIENT: U.S. EPA Region 5

PROJECT NO: GLO65586.DI.FR

SITE MANAGER: Frank Mahuta

OFFICE: GLO

SITE NAME: Enviro-Chem (ECC)

SITE ADDRESS: Zionsville, Indiana

DATE HEALTH AND SAFETY PLAN PREPARED: August 1993

DATE(S) OF SITE WORK: September 1993–November 1993

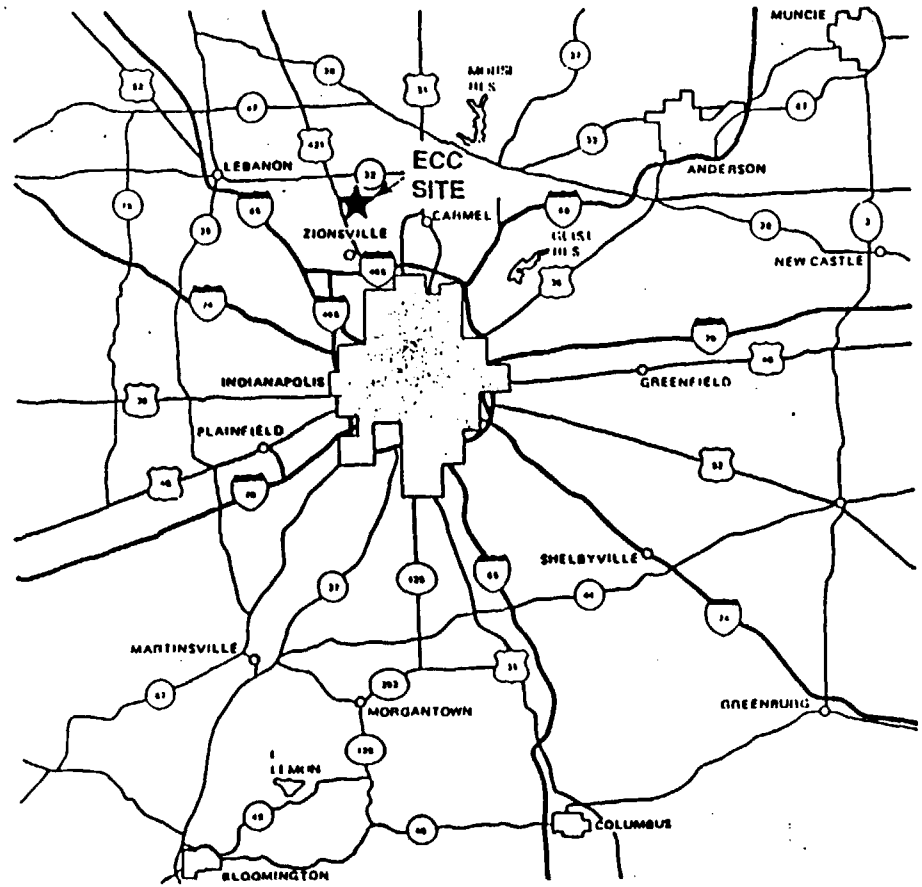
SITE ACCESS: Vehicular access to the site is by means of a service road that intersects U.S. Highway 421 directly west of the site.

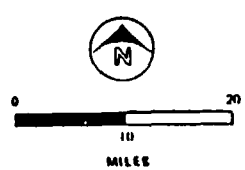
SITE SIZE: The areal extent of the landfill proper is approximately 6.5 acres.

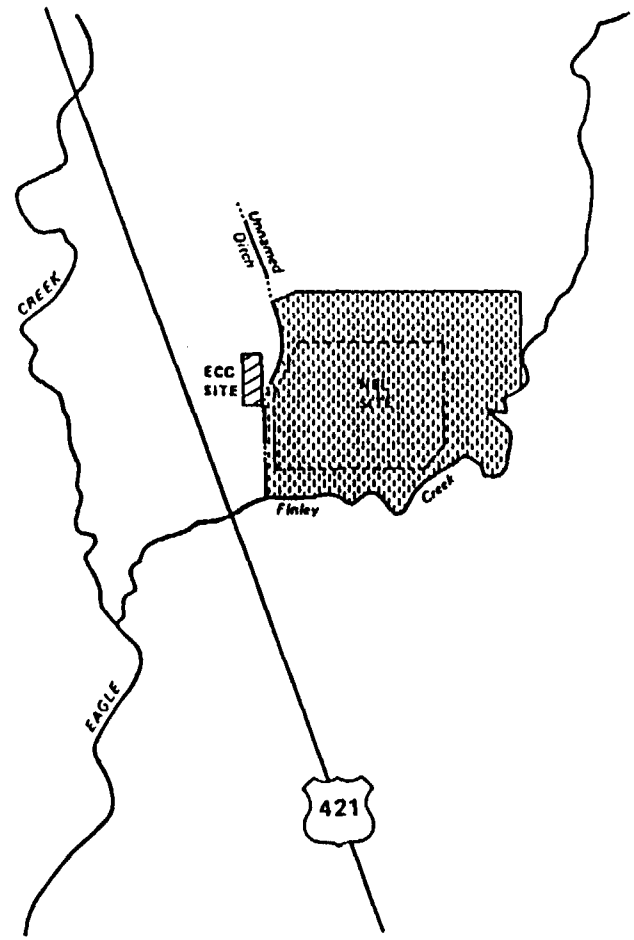
SITE TOPOGRAPHY: The site is rectangular in shape and relatively flat. The southern end of the site is covered by a concrete pad. The remainder of the site is covered by tall grass with the exception of two small buildings and some miscellaneous debris. Immediately east of the ECC site is the Northside Sanitary Landfill (NSL) National Priority List (NPL) site.

SITE DESCRIPTION AND HISTORY: The ECC site is located in Zionsville, Boone County, Indiana, approximately 10 miles northwest of Indianapolis along U.S. Highway 421 (Figure 1). It is bounded on the east by the Northside Sanitary Landfill (NSL) National Priority List site. An unnamed ditch separates the two facilities. Several residential homes are located within 1/2 mile of the site to the north and west.

The ECC site was a 6.5-acre solvent recycling facility engaged in recovery, reclamation, and brokering of primary solvents, oils, and other wastes received from industrial clients. Waste materials were received in drums and bulk tankers and prepared for reclamation or disposal. Drum shipments to the site were halted in February 1982.







LEGEND

NSL SITE

ECC SITE

LANDFILL AREA

SOURCE: U.S.G.S. 7.5 min quadrangle, Reston, Ind. 1969.

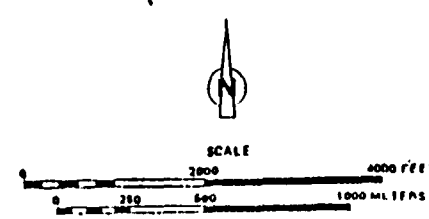


FIGURE 1
LOCATION MAP
ECC WORK PLAN

The EPA investigated the site and placed it on the National Priorities List in 1983. Interim remedial action at the site by the EPA in 1983 and 1984 included cleanup of drums, containers, and a sludge lagoon and removal of certain contaminated soils. Remedial investigation of the site began in 1983 and continued through December 1984. Results of that investigation were issued in a Remedial Investigation Report in 1986.

A feasibility study for the site was conducted in late 1986. A Combined Alternatives Analysis for both the ECC and NSL sites was issued in December 1986. In the Record of Decision (ROD) signed September 25, 1987, the EPA chose combined Alternative No. 5, which consisted of groundwater interception and treatment and construction of a RCRA-compliant cap, for remediation of the two sites.

Before the remedial action to close the sites was designed, predesign field investigations to characterize chemical and physical conditions at both sites were conducted in 1987 and 1988. Work included sampling and analysis of groundwater and soil to characterize contamination in the supplemental investigation area south of the ECC site and southwest of the NSL site. The ECC PRP-directed consultants conducted additional sampling and analyses in 1987 and a soil vapor extraction pilot study in the summer of 1988.

The PRP group for the ECC site is conducting the design and construction of the closure. A consent decree has been signed by some of the PRPs, henceforth called the Settling Defendants.

As a result of changes in the selected remedial action identified during consent decree negotiations, the EPA issued a ROD amendment detailing the revised remedial action objectives. The ROD was amended on June 7, 1991. Separate, complementary remedies for each site will be implemented instead of the single combined remedy for both sites selected in the 1987 ROD. The major components of the consent decree remedial action for the ECC site include:

- An enhanced soil vapor extraction system designed to remove and destroy volatile organic compounds (VOCs) to acceptable soil concentrations
- A RCRA-compliant cap (Subtitle C) to prevent direct contact with surface soils and to minimize the risk of remaining soil contaminants migrating into the groundwater
- Construction of a fence around the perimeter of the site and the posting of warning signs
- An onsite system for monitoring groundwater quality in the till unit
- An offsite groundwater monitoring system in the till and sand and gravel units to monitor the effectiveness of the remedy
- Surface water monitoring to determine the effectiveness of the remedy
- Deed and use restrictions to limit future uses of the site

The consent decree was entered on September 10, 1991, officially initiating remedial design and remedial action (RD/RA) activities at the site. Field work will commence with the RA Site Preparation and Materials Removal performed by the PRP's Engineer, AWD Technologies, Inc. A site map showing the locations of support zone, decontamination, and exclusion zones and supporting facilities will be provided by the AWD Technologies SSC prior to commencing field activities. This Health and Safety Plan (HASP) is for the field oversight activities of CH2M HILL staff during the site preparation and materials removal (SP/MR) phase of the RA.

LOCATIONS OF SUPPORT, DECONTAMINATION, AND EXCLUSION ZONES; SITE TELEPHONE; FIRST AID STATION

See AWD Technologies' Site Preparation and Material Removal Drawing Number C-3 (Support Zone Plan) for locations of the support, decontamination and exclusion zones. The location of the site telephone and first aid station will be provided by the AWD Technologies SSC prior to commencing field activities.

2.0 PROJECT ORGANIZATION AND TASKS TO BE PERFORMED UNDER THIS PLAN

2.1 PROJECT ORGANIZATION The major participants in this work are listed below.

Frank Mahuta will serve as the CH2M HILL Site Manager, and will be responsible for advising the EPA's RPM of the progress of the work as well as overall project management.

Tim Harrison and Mark Petershack will alternately serve as the CH2M HILL Resident Observer during SP/MR activities at the site and will be responsible for onsite monitoring of the field work for conformance with (1) the PRP's EPA approved Work Plans, and (2) the compliance documents.

Karen Vendl is the EPA's RPM for the NSL site. CH2M HILL will direct all of its comments concerning the progress of the work to Karen.

AWD Technologies, Inc. is the contractor selected by the PRPs to perform the RA SP/MR activities at ECC, and is responsible for all site activities, including overall site safety.

2.2 DESCRIPTION OF TASKS

CH2M HILL's role is to observe AWD's field activities for conformance with the latter's EPA-approved SP/MR RA Work Plans and with the intent of the compliance documents. CH2M HILL's Site Manager will notify the EPA RPM as soon as possible of any observed field activity that, the opinion of the Resident Observer, does not conform with the aforementioned documents. CH2M HILL will not direct, advise, or make recommendations to the PRPs or their representatives while performing these field activities. All field sampling activities and corresponding laboratory analyses required as part of the SP/MR activities will be performed and directed by the PRPs and their representatives.

According to EPA-approved SP/MR documents, the activities that will take place during the SP/MR phase are the following:

- Site Survey—The initial site survey will require partial relocation of existing tanks and partial clearing and grubbing of the site in order to set monuments, site layout markers, and decontamination and support zone locations.

- Debris Sampling—AWD will immediately take samples of porous site debris and have them analyzed to determine the degree of contamination and begin the special waste classification and approval process.

- Clear and Grub—Labor and equipment will be used to remove trees and shrubs clearing the site for the completion of the site survey and fence placement and existing fence removal. These debris will be staged for removal offsite.

- Fence Relocation—AWD will remove the appropriate existing fence and install new fence and gates to the perimeters and boundaries established by the site survey and layout.

- Initial Site Grading—AWD will regrade the site and establish roads, site drainage, erosion control, and the remediation support zone. Stone will be placed to prepare the support zone for the mobilization and placement of the site trailers.

- Concrete Decontamination Pad—AWD will excavate and construct the concrete decontamination pad including the precast manhole, underdrain, and splash shields. This pad facility has been designed to last through subsequent phases of the remedial action.

- Wastewater Storage Pad—AWD will prepare the area, place and compact the stone necessary for the construction of the wastewater storage pad and place the wastewater storage tanks.

- Site Support Facilities—Once the support area has been graded, gravel will be placed throughout all occupied areas of the support zone. Office trailers, including a personnel decontamination trailer and storage trailer, will be placed and utilities will be connected. Activation of access/egress restrictions will occur thereafter. A fence will be installed between the exclusion zone and the support zone inhibiting personnel access/egress except through the personnel decontamination trailer. A permanent security fence will be installed around the ECC site perimeter and support zone. Internal access will only be possible during hours of operation.

- Tank Rinsing and Destruction—There are 53 steel tanks that will be removed from the exclusion zone. AWD will place the tanks on the tank decontamination pad, rinsed off, and scanned with a PID externally and internally. An LEL/O_2 meter will also be used for internal monitoring prior to cutting any tank. Initial scanning of the tanks with a PID and LEL/O_2 during a field investigation in November 1992 found no readings that would inhibit hot methods of tank cutting. According to AWD, no elevated readings are anticipated during tank demolition. Once instrumental readings indicate a safe atmosphere for cutting, the tank will be cut so that internal decontamination may be completed. Once visually clean, the tank will be taken to the laydown area and cut for disposal.

- Site Debris Removal and Drum Relocation—AWD will remove the miscellaneous site debris and the materials within the process and A-frame buildings. This material will be loaded into appropriate rolloff boxes for later transportation and disposal at the appropriate facility.

  Approximately 20 drums will be relocated to the existing drum storage area for further disposal under a future phase of work.

  AWD plans to remove the boiler in the process building and transport it as one permitted load to an approved disposal facility.

- Building Dismantlement—AWD will dismantle both the process building and the A-framed structure to grade level and load the material into rolloff boxes for disposal at the appropriate facility(ies).

- Demobilization—AWD will remove all men and equipment from the site after final site grading and equipment rinsing.

AWD Technologies, Inc. is the PRP's contractor responsible for all site activities, including monitoring and implementing the overall site Health and Safety Plan (HASP). CH2M HILL will adhere to its own HASP while onsite but will comply with any more stringent site safety requirements that may be established by AWD's Site Safety Officer (SSO) or listed in their HASP. CH2M HILL has arranged with representatives of the PRPs to fulfill the requirements of the buddy system for CH2M HILL's Resident Observer. A copy of the letter confirming this arrangement is shown in Attachment 1.

The highest level of protection that will be used to perform oversight activities will be modified Level D. If a higher level of personal protection is required during any site activities, the CH2M HILL staff will observe the work from a modified Level D location. CH2M HILL will be responsible for having required

personal protective equipment (PPE) for its staff at the work site. It is assumed that the PRPs or their representatives will provide sufficient storage space for this equipment.

2.3 DESCRIPTION OF SUBCONTRACTORS

No subcontractors will be used for purposes of conducting the RD Oversight of the PRPs' SP/MR activities.

All Resident Observers must sign off on Attachment 2 before they begin site work. The Site Manager will maintain the Record of Hazardous Waste Field Activity as shown in Attachment 3 for each Resident Observer.

3.0 HAZARD EVALUATION AND CONTROL

3.1 COLD STRESS (REFERENCE CH2M HILL SOP HS-09)

3.1.1 GUIDELINES FOR WORKING IN COLD WEATHER WHILE WEARING PERSONAL PROTECTIVE EQUIPMENT (PPE)

Temperature	Work Cycle	Rest Cycle	Control Measures
<32° F or <55° F & raining	2 hrs	15 min	Rest in a warm area. Drink at least 8 ounces of warm non-caffeinated, non-alcoholic beverage at each rest break. Schedule a mid-day lunch break of at least 30 minutes in a warm area to begin not later than 5 hours after startup.

3.1.2 SYMPTOMS AND TREATMENT OF COLD STRESS

	Frostbite	Hypothermia
Symptoms	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Remove victim to a warm place. Rewarm area quickly in warm (not hot) water. Have victim drink warm fluids—not coffee or alcohol. Do not break any blisters. Elevate the injured area and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids—not coffee or alcohol. Get medical attention.

3.2 PHYSICAL (SAFETY) HAZARDS AND CONTROLS (REFERENCE APPROPRIATE CH2M HILL SOP HS-03)

Hazard	Engineering or Administrative Controls
Build-up of static electricity	No spark sources within 50 feet of an excavation, heavy equipment, or UST removal.
Suspended loads	Work not permitted under suspended loads.
Moving vehicles	Personnel to remain outside of turning radius.
Slip, trip, fall hazards due to muddy work areas	Use wood pallets or similar devices in muddy work areas.
Trenches/excavations	Remain 2 feet from edge of trench at all times. The Resident Observer shall not enter trenches.

3.3 PROCEDURES TO LOCATE BURIED UTILITIES

This section is not applicable.

3.4 BIOLOGICAL HAZARDS AND CONTROLS

This section is not applicable.

3.5 TICK BITES, LYME DISEASE, AND ROCKY MOUNTAIN SPOTTED FEVER (RMSF)

Check often for tick bites. If bitten, carefully remove tick with tweezers, making certain to remove pincers, being careful not to crush the tick. After removing the tick, wash your hands. Disinfect area, and dress. If the tick resists or cannot be completely removed, seek medical attention.

Look for symptoms of lyme disease or RMSF. Lyme: rash that looks like a "bulls-eye," with small welt in center, several days to weeks after tick bite. RMSF: Rash comprising red spots under skin, 3 to 10 days after tick bite. For both, chills, fever, headache, fatigue, stiff neck, bone pain. If symptoms appear, seek medical attention.

3.6 RADIOLOGICAL HAZARDS AND CONTROLS

This section is not applicable.

3.7 HAZARDS POSED BY CHEMICALS BROUGHT ONSITE

Refer to CH2M HILL *Hazard Communication Program Manual* which is available from the Corporate Human Resources Department in Denver. The Resident Observer shall review the Material Safety Data Sheets (MSDSs) provided by the AWD SSO for chemicals that CH2M HILL employees are potentially exposed to.

MSDSs shall be provided by the Site Manager to the Resident Observer for the following chemicals that will be provided by CH2M HILL:

Chemical	Use
Explosimeter Calibration Gas	Calibration of Explosimeter/O_2
HNu Calibration Gas	Calibration of HNu

3.8 KNOWN CONTAMINANTS OF CONCERN

Vapors from VOCs may be present in the breathing zone at locations where intrusive soil investigations (e.g., grading, decontamination pad installation) are being performed. In Table 3-2 of the ECC Consent Decree, a list of VOCs detected in the soil at concentrations above acceptable soil concentrations are listed. Table 1 summarizes those VOCs and the pertinent data associated with the health risks posed by those compounds.

TABLE 1—POTENTIAL VOLATILE CONTAMINANTS OF CONCERN PRESENT IN SOIL

Volatile Organic Compounds (VOCs)	Maximum Detected Concentrations (µg/kg)	PEL, REL, or TLV[1] (ppm)	IDLH[2] (eV)	PIP[3] (eV)	Symptoms and Effects of Exposure
Acetone	650,000	250	20,000	9.69	CNS depression and narcosis. Mildly irritating to skin and eyes.
Chloroform	2,900	2	1,000 (Ca)	11.42	Dizziness, mental dullness, nausea, disorientation, headaches, fatigue, anesthesia, carcinogen.
1,1-Dichloroethane	35,000	100	4,000	11.06	CNS depression, skin irritant, liver and kidney damage.
1,1-Dichloroethene	380	1	---	9.66	CNS depression, eye and skin irritant. Liver and kidney carcinogen.
Ethylbenzene	1,500,000	100	2,000	8.76	Irritant to eyes and mucous membranes, headache, dermatitis, narcosis, coma.
Methylene Chloride	310,000	500	5,000 (Ca)	11.32	Fatigue, weakness, sleepiness, light-headedness, limbs numb, tingle, nausea, irritant to eyes and skin, carcinogen.
Methyl Ethyl Ketone	2,800,000	200	3,000	9.54	Irritant to eyes and nose, headache, dizziness, vomiting, dermatitis, polyneuropathy.
Methyl Isobutyl Ketone	190,000	50	3,000	9.30	Irritant to eyes and mucous membrane, headache, narcosis, coma, dermitis, peripheral neuropathy.
Tetrachloroethene	650,000	25	500 (Ca)	9.32	Irritant to eyes, nose, throat. Flush face and neck. Vertigo, dizziness, incoordination, headache, somnolence, skin erytherma, liver damage, carcinogen.
Toluene	2,000,000	100	2,000	8.82	CNS depression, headache, dizziness, visual disturbances.
1,1,1-Trichloroethane	1,100,000	10	1,000 (Ca)	11.00	Headaches, dizziness, eye irritant, dermatitis, cardiac arrhythmia, liver damage, kidney damage.
1,1,2-Trichloroethane	550	10	500 (Ca)	11.00	CNS depression, irritant to nose and eyes. Liver and kidney damage, carcinogen.
Trichloroethene	4,800,000	25	1,000 (Ca)	9.47	Headaches, dizziness, sleepiness, fatigue, lassitude, and headache. Liver and kidney carcinogen.
Total Xylenes	6,800,000	100	10,000	8.44–8.56	CNS depression, headache, dizziness, visual disturbances.

[1]Lower value of PEL, REL, or TLV listed.
[2]Ca = occupational carcinogen
[3]Photoionization potential

4.0 PERSONNEL

4.1 EMPLOYEES (REFERENCE CH2M HILL SOP HS-01 and HS-02)

Employees listed below are enrolled in the CH2M HILL chemical protection program (CPP) and meet the medical surveillance, 40-hour initial training, 3-day on-the-job experience, and 8-hour annual refresher training requirements of OSHA 29CFR1910.120. Employees designated "SSC" have received 8 hours of supervisor and 8 hours of instrument training and can serve as site safety coordinator (SSC) for the level of protection indicated. There must be one SSC present during any task performed in exclusion or decontamination zones with the potential for exposure to safety and health hazards. Employees designated "FA-CPR" are currently certified by the American Red Cross, or equivalent, in first aid and CPR. There must be one FA-CPR designated employee present during any task performed in exclusion or decontamination zones with the potential for exposure to safety and health hazards. The "buddy system" requirements of OSHA 29CFR1910.120 are to be met at all times.

Employee Name	Office	Responsibility	SSC/FA-CPR
Tim Harrison	GLO	Resident Observer	FA-CPR
Mark Petershack	GLO	Resident Observer	FA-CPR

4.2 HEALTH AND SAFETY AND FIELD TEAM CHAIN OF COMMAND AND PROCEDURES

4.2.1 CLIENT

Karen Vendl—U.S. EPA RPM

4.2.2 CH2M HILL

Francis Mahuta—Site Manager reporting to U.S. EPA RPM
Tim Harrison—Assistant Site Manager, Resident Observer reporting to U.S. EPA RPM
Mark Petershack—Resident Observer reporter to CH2M HILL Assistant Site Manager

4.2.3 SUBCONTRACTOR

Not Applicable

5.0 PERSONAL PROTECTIVE EQUIPMENT (PPE) SPECIFICATION[1] (REFERENCE CH2M HILL SOP HS-07 and HS-08)

Task	Level	Body	Foot	Head	Eye	Hand	Respirator
All oversight tasks	D	Layer of washable clothing	Steel toe, steel shank safety boots	Hardhat	Safety glasses	Leather or cotton work gloves	None required.
If conditions require an upgrade from Level D	Modified D	Layered washable clothing with Tyvek coveralls Duct tape at all joints	Steel toe, steel shank safety shoes with disposable neoprene booties taped to coveralls	Hardhat	Safety glasses	Nitrile gloves with surgical inner gloves	None required.

Note 1: Modifications: Ear plugs (or equivalent) shall be available as needed.

5.1 REASONS TO UPGRADE OR DOWNGRADE LEVEL OF PROTECTION

Not applicable. If a level of protection higher than modified Level D is required, the Resident Observer must move to a modified Level D location.

6.0 AIR MONITORING EQUIPMENT SPECIFICATION (REFERENCE CH2M HILL SOP HS-06)

Instrument	Tasks	Action Levels		Frequency	Calibration
CGI:	Observing work in the vicinity of decontamination pad excavation.	0-10% LEL 10-25% LEL >25% LEL	No expl.[1] hazard Pot.[2] expl. hazard Expl. hazard; evacuate the site	Once per work location per day; more frequently if additional intrusive work is done between same day visits.	Daily. Record in log book.
Photoionization Detector (PID):	All oversight work in exclusion zone.	ppm[ab3] 0.5	Level D	Once per work location per day; more frequently if additional intrusive work is done between same day visits.	Daily. Record in log book.
Dust Monitor: Mini-Ram	All oversight work in exclusion zone.	mg/m[3ab] 5	Level D	As needed.	Zero daily

Note 1: expl = explosion Note 2: pot = potential Note 3: ab = above background

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6.1 CALIBRATION SPECIFICATION

Instrument	Gas	Span	Reading	Method
PID: HNu, 10.2 ev probe	100 ppm isobutylene	9.8 ± 2.0	55 ppm	1.5 l/m reg T-tubing 0.25 l/m reg direct tubing
CGI: MSA 260, 261, 360, or 361	0.75% pentane	N/A	50% LEL ± 5% LEL	1.5 l/m reg direct tubing

6.2 AIR SAMPLING

Not applicable except as described in Section 6.0.

7.0 DECONTAMINATION SPECIFICATION

Personnel decontamination procedures will follow those listed in AWD's HASP.

8.0 SPILL CONTAINMENT PROCEDURES

Not applicable.

9.0 CONFINED SPACE ENTRY

CH2M HILL resident observers are not authorized to enter any confined spaces during oversight activities.

10.0 WORK PROCEDURES

10.1 WORK PRACTICES

- No spark sources within exclusion or decontamination zones.
- Avoid visibly contaminated areas.
- No eating, drinking, or smoking in contaminated areas, or exclusion or decontamination zones.
- AWD SSC to establish areas for eating, drinking, smoking.
- No contact lenses in exclusion or decontamination zones.
- Site work will be performed during daylight hours whenever possible. Any work conducted during hours of darkness will require enough illumination intensity "to read a newspaper without difficulty."

10.2 SITE CONTROL MEASURES

- Determine wind direction and other general weather conditions (e.g., temperature, precipitation, etc.).
- Chemicals to be stored in proper container.
- MSDSs are available for onsite chemicals employees exposed to.
- Establish procedures for disposal of PPE with AWD.
- Resident Observer shall attend AWD site safety briefings as required.

11.0 EMERGENCY RESPONSE PLAN (REFERENCE SOP)

11.1 PRE-EMERGENCY PLANNING

- Locate nearest telephone to the site and inspect onsite communications.
- Locate chemical and safety hazards.
- Review emergency procedures for personnel injury, exposures, fires, explosions, chemical and vapor releases as listed in AWD's HASP.
- Locate onsite emergency equipment and supplies of clean water.
- Know local emergency contacts, hospital routes, evacuation routes, and assembly points.

11.2 EMERGENCY EQUIPMENT AND SUPPLIES

The AWD SSC marks the locations of emergency equipment on the site map and posts the map in the support zone.

- 20 lb ABC fire extinguisher
- Industrial first aid kit
- Facility emergency equipment:
- Additional emergency equipment:

11.3 EMERGENCY MEDICAL TREATMENT

Follow the procedures listed in the AWD HASP. In addition:

- Notify the Site Manager of any injury to CH2M HILL personnel.
- Notify the CH2M HILL District or Regional Health and Safety Manager.
- Notify the injured person's human resources department.
- Prepare an incident report. Submit this to the Corporate Director Health and Safety (WDC) and Corporate Human Resources Department (DEN) within 48 hours.

11.4 EVACUATION

These procedures are listed in the AWD HASP.

11.5 EVACUATION ROUTES AND ASSEMBLY POINTS

These procedures are to be developed by the AWD SSC.

11.6 EVACUATION SIGNALS

These signals are to be developed by the AWD SSC.

12.0 EMERGENCY RESPONSE TELEPHONE NUMBERS

These telephone numbers are listed in Table 12-1 of AWD's HASP.

12.1 GOVERNMENT AGENCIES INVOLVED IN PROJECT

Federal:	U.S. Environmental Protection Agency, Region 5	**Phone:**	(312) 886-4739 (Ms. Karen Vendl)
State:	Indiana Department of Environmental Management	**Phone:**	(317) 241-4226 (24-hour Emergency Response Line)
Local:	None	**Phone:**	None